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A13. Are intertidal mudflat communities (fish and shrimp) affected by cockle culture?

Extensive cockle culture on coastal intertidal mudflats which function as productive feeding grounds for fish and shrimp may affect mudflat productivity and disturb feeding activity. On the other hand, cockle culture may attract predators of these bivalves thus altering the structure of the mudflat community. The aim of the present study is to examine fish ingressions into two adjacent coastal mudflat areas, one with cockle culture and the other without cockle culture, especially to compare their diversity and abundance. Two sampling sites were selected at Bagan Sungai Buloh (BSB: with cockle bed) and Bagan Pasir (BP: without cockle bed) in the Kuala Selangor mudflat area. Monthly samplings were carried out on spring tide using an enclosure trap (*belat lengkung*) set around a measureable enclosed area during high slack, and which retained fish and invertebrates when the tide ebbed. In 6 months of samplings, 62 identified species of fishes and 8 species of prawns were recorded. Both mudflats differed in their fish species richness, with 59 species in BSB and 41 species in BP. However, the BP mudflat had significantly higher fish biomass ($142.2 \pm 148.7 \text{ kg/ha}$) than BSB mudflat ($43.6 \pm 41.2 \text{ kg/ha}$) (t-test, $p < 0.05$). Mean fish abundance in Bagan Pasir ($8065 \pm 5980 \text{ N/ha}$) was also found to be higher than in BSB ($5157 \pm 5274 \text{ N/ha}$) (t-test, $p > 0.05$). Most frequent fish species that regularly occurred every month on both sites were the grey mullet *Liza subviridis* and tongue sole *Cynoglossus bilineatus*. The top 10 most important species of fish in terms of biomass for BSB were *Aspericorvina jubata*, *Otolithus ruber*, *Plicofollis argypleuron*, *Leiognathus brevirostris*, *Eleutheronema tetradactylum*, *Dasyatis zugei*, *Liza subviridis*, *Arius sagor*, *Thyrssa kammalensis* and *Panna microdon*. In BP, the top 10 were *A. jubata*, *T. kammalensis*, *Plotosus canius*, *Arius caelatus*, *P. argyroleuron*, *L. subviridis*, *Strongylura strongylura*, *C. bilineatus*, *Nibea soldado* and *Panna microdon*. Fish abundance and biomass peaked in January at BP mudflat, with more than 50% of abundance and biomass dominated by the sciaenid *A. jubata*. The majority of fish caught were juveniles. For penaeid shrimps, there was no significant different in abundance and biomass between both sites. The dominant species of shrimps in terms of biomass in BSB was *Fenneropenaeus merguensis*, while for BP was *Metapenaeus affinis*. Low abundance and biomass of fish species in cockle culture area is likely due to direct disturbance from culture activity as well as continually scoured sediments from cockle harvests which may affect mudflat productivity.